

What is claimed is:

1. A polymer emulsion which is mixed a synthetic large particle polymer emulsion containing polymers having the particle size of  $0.15\mu\text{m}$  or longer in diameter and a synthetic fine particle polymer emulsion containing polymers having the particle size of  $0.10\mu\text{m}$  or shorter in diameter, wherein the glass transition temperature of the latter polymer is at least 20 degree lower than that of the former emulsion and the particle size ratio between the former polymer and the latter polymer is 2 or more.
2. A polymer emulsion according to claim 1, wherein the content of the large particle polymer emulsion is 50% to 95% by weight and the content of the fine particle polymer emulsion is 50% to 5% by weight.
3. A polymer emulsion according to claim 1, wherein the large particle polymer emulsion comprises 40 – 60% of a polymer, 0.1 – 4% of an emulsifier and 35 – 58% of water, and the fine polymer emulsion comprises 30 – 60% of a polymer, 0.2 – 6% of an emulsifier and 35 – 68% of water.
4. A polymer emulsion according to claim 1, wherein the large particle polymer emulsion and the fine polymer emulsion are styrene-butadiene emulsion, acrylic emulsion, styrene-acrylic emulsion, vinyl chloride emulsion vinylidene chloride emulsion or vinyl acetate emulsion.
5. A paper coating composition for making moisture-proof coated paper and/or recyclable coated paper which comprises the polymer emulsion described in claim 1 and a wax.